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EXAMINER

WOOD, WILLIAM H

ART UNIT	PAPER NUMBER
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2124

DATE MAILED: 02/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/614,635

Applicant(s)

SIGMUND, ULRICH

Examiner

William H. Wood

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2003.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-22 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

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DETAILED ACTION

Claims 1-22 are pending and have been examined.

Through response received on 10 December 2003, claims 1 and 12 were amended, claims NONE were cancelled and claims NONE were added.

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10 December 2003 has been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3, 7-8, 11-14, 18, 19 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by **Aho et al.**, Compilers: Principles, Techniques, and Tools.

Claim 1

Aho disclosed an apparatus for generating computer assembly code (*pages 1-24, chapter 1; a compiler*) comprising:

- ♦ an abstract routine generator for receiving a data stream comprising a multimedia routine (*data stream comprising a multimedia routine interpreted as instructions using various media or memory*) and for outputting a generic abstract representation thereof during runtime (*page 10, figure 1.9; page 463-512, in particular page 464*); and
- ♦ a translator for said abstract routine generator for receiving said abstract representation and for outputting processor specific code translated from said abstract representation for processing multimedia input data during said runtime (*pages 463-464, figures 8.1 and 8.2; also first sentence page 463*).

Claim 2

Aho disclosed the apparatus of Claim 1, wherein in said abstract routine generator builds an abstract routine during runtime (*page 1-24; chapter 1, inherent that generator is operating during its runtime*).

Claim 3

Aho disclosed the apparatus of Claim 1, wherein said abstract routine generator builds an abstract routine in the form of a graph (*page 463-512, chapter 8, in particular page 464, section 8.1, graphical representations of intermediate languages*).

Claim 7

Aho disclosed the apparatus of Claim 3, wherein said graph is input to said translator (*page 463, figure 8.1, "code generator"*).

Claim 8

Aho disclosed the apparatus of Claim 3, wherein the output of said translator is in assembly code (*page 5, figure 1.3, compiler outputs assembly to assembler*).

Claim 11

Aho disclosed the apparatus of Claim 3, wherein said graph is a function of any of source block, target block, change in the block, color, stride, change in stride, display block, and spatial filtering (*page 463-722, numerous examples/figures of graphs representing blocks of code*). The above phrase "is a function of any of the" is interpreted as "or" (in the alternative) in the rejection.

Claims 12, 13, 14, 18, 19 and 21

The limitations of method claims 12, 13, 14, 18, 19 and 21 correspond to apparatus claims 1, 2, 3, 7, 8 and 11 and are rejected in the same manner.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 5-6, 10, 16, 17 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Aho** et al., Compilers: Principles, Techniques, and Tools.

Claims 5 and 6

Aho did not explicitly state the apparatus of Claim 1, wherein said multimedia data comprise image or audio input data. Official Notice is taken that it was known at the time of invention to utilize instructions which manipulate audio and image data (any instruction manipulating memory containing such information). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the compiling system of **Aho** with such audio and image data. This implementation would have been obvious because one of ordinary skill in the art would be motivated to compile for all instructions manipulating all data in a piece of software or code (audio and image data have been common since the 1980's, thus compilers compile for them).

Claim 10

Aho did not explicitly state the apparatus of Claim 1, wherein said processor-specific code performs any of the operations of add, sub, multiply, average, maximum,

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minimum, compare, and, or, xor, pack, unpack, and merge on said input data. **Aho** did not explicitly discuss the processor-specific commands/operations issued by a code generator. Official Notice is taken that it was known at the time of invention for processors to perform specific functions/operations, such as add, sub, multiply and so on (though **Aho** discusses using a backend section of a compiler for processor specifics, page 20). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the compiler of **Aho** with processor-specific functionality as above. This implementation would have been obvious because one of ordinary skill in the art would be motivated to generate code, which would actually operate on a processor (part of the purpose of a compiler). The above phrase "performs any of the operations" is interpreted as "or" (in the alternative) in the rejection.

Claims 16, 17 and 20

The limitations of method claims 16, 17 and 20 correspond to apparatus claims 5, 6 and 10 and are rejected in the same manner.

6. Claims 9 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Aho et al.**, Compilers: Principles, Techniques, and Tools in further view of "Dictionary of Computing".

Claim 9

Aho did not explicitly state the apparatus of Claim 1, wherein said translator's configuration can be changed by use of a dynamic library link. **Computing** demonstrated that it was known at the time of invention to utilize dynamic link libraries to aid programs and make corrections to those programs (page 149, DLL). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the elements (such as code generator/translator) of **Aho's** compilers with dynamic link libraries as found in **Computing's** teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to aid in the flexibility of the various components through making corrections and updates (as suggested by the definition) and thus altering the configuration.

Claim 22

The limitations of method claim 22 correspond to apparatus claim 9 and are rejected in the same manner.

7. Claims 1-3, 7-8, 10-14 and 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Benson** (USPN 5,307,492).

Claim 1

Benson disclosed an apparatus comprising:

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- ♦ an abstract routine generator for receiving a data stream comprising a multimedia routine and for outputting a generic abstract representation thereof during runtime (*column 3, line 64 to column 4, line 4*); and
- ♦ a translator for said abstract routine generator for receiving said abstract representation and for outputting processor specific code translated from said abstract representation for processing multimedia input data during said runtime (*column 4, lines 5-11*).

Benson did not explicitly state generating assembly code. **Benson** demonstrated that it was known at the time of invention to use the translating system to produce assembly in the target architecture (column 3, lines 50-55). It would have been obvious to one of ordinary skill in the art at the time of invention to implement **Benson's** translation with producing assembly as found in **Benson's** own teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to provide either implementation as **Benson** indicated both were possible and therefore needed.

Claim 2

Benson disclosed the apparatus of Claim 1, wherein in said abstract routine generator builds an abstract routine during runtime (*inherent that analyzer/generator/translator is operating during its runtime*).

Claim 3

Benson disclosed the apparatus of Claim 1, wherein said abstract routine generator builds an abstract routine in the form of a graph (*column 4, lines 5-6*).

Claim 7

Benson disclosed the apparatus of Claim 3, wherein said graph is input to said translator (*column 4, lines 5-11, analyzing/generator relates to translator*).

Claim 8

Benson did not explicitly state the apparatus of Claim 3, wherein the output of said translator is in assembly code. **Benson** demonstrated that it was known at the time of invention to use the translating system to produce assembly in the target architecture (*column 3, lines 50-55*). It would have been obvious to one of ordinary skill in the art at the time of invention to implement **Benson's** translation with producing assembly as found in **Benson's** own teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to provide either implementation as **Benson** indicated both were possible and therefore needed.

Claim 10

Benson did not explicitly state the apparatus of Claim 1, wherein said processor-specific code performs any of the operations of add, sub, multiply, average, maximum, minimum, compare, and, or, xor, pack, unpack, and merge on said input data.

However, **Benson** demonstrated that it was known at the time of invention for processors to perform specific functions/operations, such as add, sub, multiply and so on (column 9, lines 47-50). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the output of the system of **Benson** with processor-specific functionality as above. This implementation would have been obvious because one of ordinary skill in the art would be motivated to generate code, which would actually operate on a processor (part of the purpose of a compiler). The above phrase “performs any of the operations” is interpreted as “or” (in the alternative) in the rejection.

Claim 11

Benson disclosed the apparatus of Claim 3, wherein said graph is a function of any of source block, target block, change in the block, color, stride, change in stride, display block, and spatial filtering (*figures 6 and 7 at least*). The above phrase “is a function of any of the” is interpreted as “or” (in the alternative) in the rejection.

Claims 12-14 and 18-21

The limitations of method claims 12-14 and 18-21 correspond to apparatus claims 1-3, 7, 8 and 10-11 and are rejected in the same manner.

8. Claims 4-6 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Benson** (USPN 5,307,492) in view of **Ansari et al.** (USPN 6,473,897).

Claim 4

Benson did not explicitly state the apparatus of Claim 1, wherein said multimedia data comprise SIMD input data. **Ansari** demonstrated that it was known at the time of invention that processors use SIMD (column 5, lines 23-40). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the translation system of **Benson** with starting architecture using SIMD as found in **Ansari's** teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to convert from one processor to another (**Benson**: column 3, lines 46-50).

Claim 5

Benson disclosed the apparatus of Claim 1, wherein said multimedia data comprise image input data. **Ansari** demonstrated that it was known at the time of invention that processors use MMX (column 5, lines 23-40), which provides image input data. It would have been obvious to one of ordinary skill in the art at the time of invention to implement the translation system of **Benson** with starting architecture using MMX as found in **Ansari's** teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to convert from one processor to another (**Benson**: column 3, lines 46-50).

Claim 6

Benson disclosed the apparatus of Claim 1, wherein said multimedia data comprise audio input data. **Ansari** demonstrated that it was known at the time of invention that processors use MMX (column 5, lines 23-40), which provides audio input data. It would have been obvious to one of ordinary skill in the art at the time of invention to implement the translation system of **Benson** with starting architecture using MMX as found in **Ansari's** teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to convert from one processor to another (**Benson**: column 3, lines 46-50).

Claims 15-17

The limitations of method claims 15-17 correspond to apparatus claims 4-6 and are rejected in the same manner.

9. Claims 9 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Benson** (USPN 5,307,492) in view of "Dictionary of **Computing**".

Claim 9

Benson disclosed the apparatus of Claim 1, wherein said translator's configuration can be changed by use of a dynamic library link. **Computing** demonstrated that it was known at the time of invention to utilize dynamic link libraries to aid programs and make corrections to those programs (page 149, DLL). It would have been obvious to one of

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ordinary skill in the art at the time of invention to implement the elements (such as intermediate code analyzer/translator) of **Benson's** compilers with dynamic link libraries as found in **Computing's** teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to aid in the flexibility of the various components through making corrections and updates (as suggested by the definition) and thus altering the configuration.

Claim 22

The limitations of method claim 22 correspond to apparatus claim 9 and are rejected in the same manner.

Response to Arguments

10. Applicant's arguments with respect to claims 1-22 have been considered but are moot in view of the new ground(s) of rejection.

11. In order to illustrate the breadth of the current claim language, two separate lines of rejection are made above.

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Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William H. Wood whose telephone number is (703)305-3305. The examiner can normally be reached 7:30am - 5:00pm Monday thru Thursday and 7:30am - 4:00pm every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki can be reached on (703)305-9662. The fax phone numbers for the organization where this application or proceeding is assigned are (703)746-7239 for regular communications and (703)746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

William H. Wood
February 20, 2004

Kakali Chaki
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